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SEPTEMBER 1960

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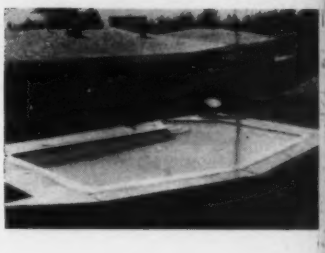

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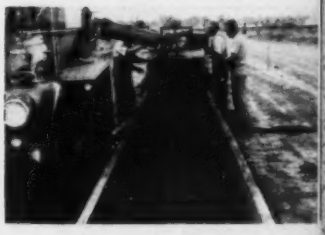

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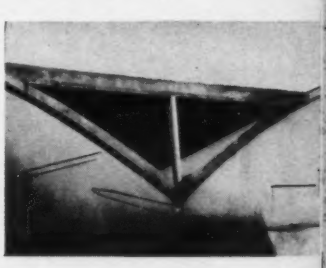

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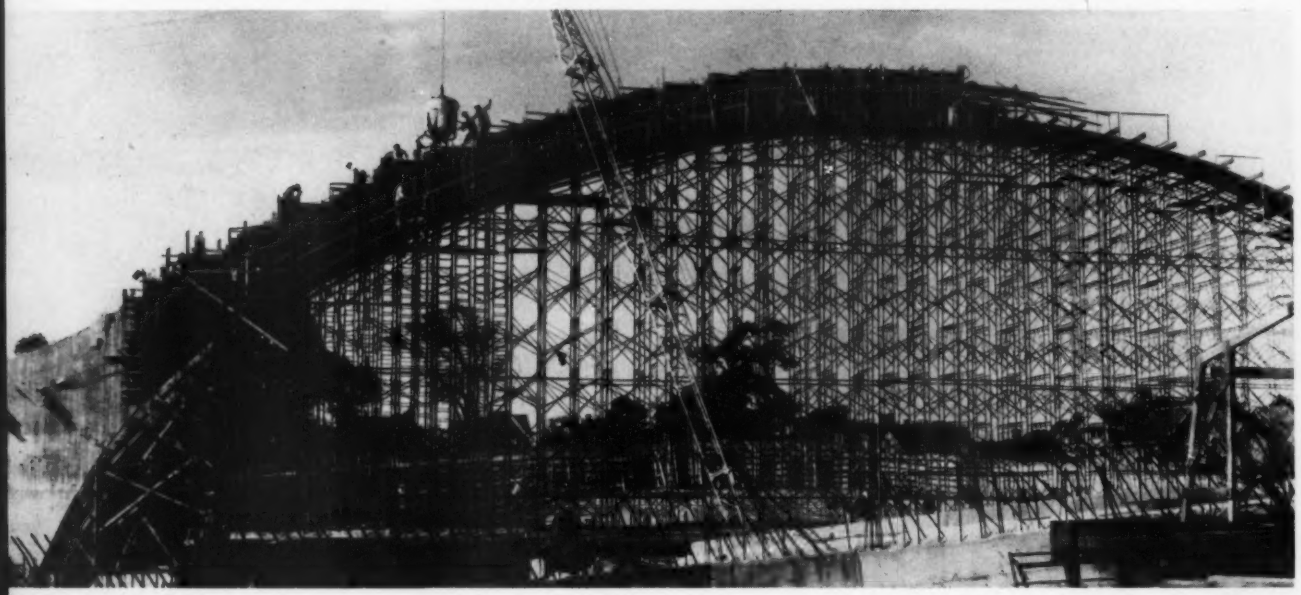
Sectional Steel Shoring

It's neat and safe . . . and saves time, trouble, and money



APTLY NAMED THE WORKHORSE of modern concrete construction, sectional steel shoring can perform a wide range of time- and money-saving jobs. The shoring sections are light in weight, easy to handle, and can be assembled quickly. They consist, basically, of the same familiar components as sectional steel scaffolding: prefabricated end frames, diagonal braces, base plates, adjustable extension legs, fast-acting locking mechanisms, and other accessories. For special shoring problems involving extreme heights, or unusual contours or terrains, a particular kind of shoring is available consisting of interlocking steel tubes, two types of couplers, and a base. The exact amount of sectional steel required for any shoring job may be either rented or purchased outright.

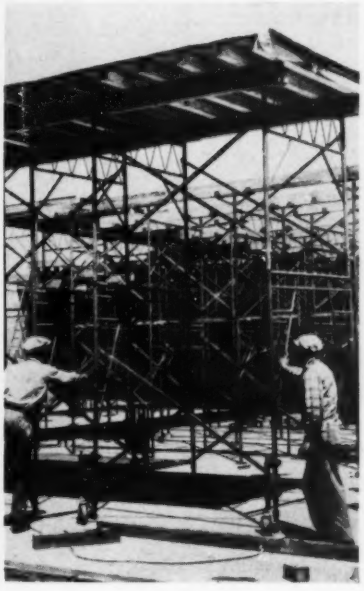
All-steel prefabricated shoring offers some pretty important advantages to the contractor. Among these, probably the most obvious is that the sectional steel frames and braces serve equally well for shoring or scaffolding, thus fulfilling a dual purpose at a single cost. By simply placing wood planks over the steel sections, a working platform is provided for forming, stripping, and placing or removing of pans.

Another cost advantage is that the free-standing sections can be put into place quickly, requiring far less fastening, fewer nails, and less lumber. Extension legs make it possible to adjust the sections to whatever height is required — without fitting and wedging. Stripping of forms is also a simple matter, for the extension legs are just as easily lowered as raised. Since the steel sections are easy to lift and transport from pour to pour, the extra cost of using cranes or other equipment for placing timbers is eliminated. Since they are mechanically adjusted and can be moved both horizontally and vertically, they speed up the progress of the pour.

Even though the steel sections

FACING PAGE: Versatility of sectional steel shoring is demonstrated here, as it serves double duty as working platform on this 240-foot concrete parabolic arch for the Yale University hockey rink.

ABOVE: Ladder-like steel shoring supplies effective support for heavy beam sections—3 feet 6 inches wide, 4 feet deep, and 13 feet long—constructed for Northeast Expressway in Revere, Massachusetts.



LEFT: Shoring units, like the one shown in the photo, are easily and quickly rolled from pour to pour, thus helping to speed concrete work as they eliminate the time and labor needed for replacing and restripping of forms.

are light in weight and less bulky than lumber, they are designed to safely support heavy loads of concrete. They can be used on all types of construction: flat slab, slab with drop heads, pan joist, intermediate beam, and poured arch. The load-bearing strength is accurately calculated in advance, and the number of units predetermined to assure the greatest efficiency on the job.

Because the use of wood is minimized, the dangers of fire are practically eliminated. Still a last advantage is that the steel sections can be used indefinitely, whereas wood shoring has a limited re-use.

The most important application of sectional steel shoring is in supporting forms for concrete overpasses and bridge piers. In all states where this type of shoring has been used for concrete bridge spans and piers, installations have met with the approval of state highway departments. In bridge construction, the prefab steel shoring provides neat, easy-to-erect support for both heavy pier beams and arched slab jobs.

It is especially well adapted to multi-storied construction, for the sections can easily be raised to the next floor by the aid of a mechanized hoist.

The mechanized movement of steel shoring applies to the horizontal as well as vertical direction. Assembled sections can be moved quickly into position and joined to existing shores by cross braces. This kind of mechanized movement of shoring makes it possible to complete big pours in record time. It also makes it possible to cut down on the amount of shoring used on a job.

A system of sliding entire sections of steel shoring to new pour areas was used by one contractor in the construction of a warehouse in New Jersey. Eleven shoring sections, each covering 720 square feet, were quickly and easily pulled on greased wood sills by a hand winch.

Sectional steel shoring is also adaptable to unusual floor or roof construction since the units can be adjusted to a variety of different levels.

Last of the versatile applications of sectional steel shores is in serving double duty as a ready-made, "built-in" scaffold for stripping of forms.

With so many uses that save both time and labor on concrete jobs, sectional steel shoring may soon become standard equipment for the modern contractor. END

Readers who would like to have additional information on the subject discussed in the foregoing article may request it by circling No. 962 on one of the reader service cards in this issue.

HORIZONTAL SHORING . . .

offers a new system of supports through the span of steel beams

BY A SIMPLE SHIFT in position from vertical to horizontal, an entirely different concept in concrete formwork has been evolved. The system, called horizontal shoring, actually makes it possible for a few supporting members to carry a heavy concrete load.

The system is made possible because of the unique construction of the horizontal beam—three different versions of which are currently being marketed in this country. Made of steel, each beam consists basically of two elements: a lattice section and a plate section, designed on the telescopic principle. Since the lattice sections come in two different lengths, a variety of spans are possible—up to a little over 20 feet. For spans greater than this, two plate members are needed, or, depending on the type of beam you use, a combination of one plate member with two lattice sections.

With several horizontal beams in place, resting on end joists, all that remains in the construction of a simple roof deck job, for example, is to lay the plywood form panels over the beams and then place the concrete.

Let's look in some detail at the way the system works. One type of beam features a wedge lock which can be opened and closed with a few blows of a carpenter's hammer. When the wedge lock is open, the plate section glides smoothly back and forth within the lattice member, allowing for easy adjustment to the desired span. When it is closed, the camber of the beam is automatically set. With the other two types of horizontal steel beam available, a few quick turns of a wrench will loosen up the bolt-and-screw-plate assembly at each end of the lattice member. You can then telescope the plate members to the correct length and run the bolt back up to clamp the members firmly together.

A simple device for measuring the correct length of the required span—called a "jig"—may be employed. A simple jig can be constructed by fixing

FACING PAGE: In this clean open sweep of overhead steel beams, horizontal shoring dramatically demonstrates one of its chief advantages—it clears the ground area for use as work space. Here, you see the system in use in the construction of the Eckhart Park Auditorium in Chicago, Illinois.

one strip of 2 by 4 lumber at each end of the desired length of the span. The beam is placed upside down in the jig, with the lattice section butting against one of the 2 by 4 boards. The plate section (inserted in the lattice) is then moved out to the other stationary board and locked in place by either the wedge or bolt lock, depending on the system used.

Since a single horizontal steel beam is light in weight, two men can lift it into a premarked position on the joists.

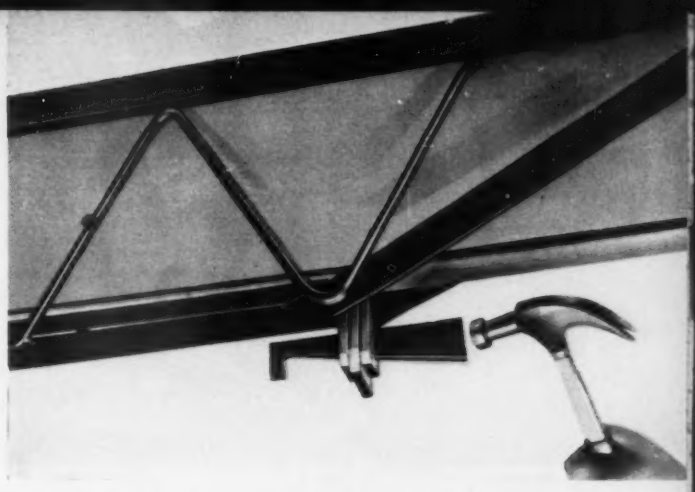
For long spans requiring either two plate members and one lattice or two lattice members with one plate, intermediate vertical shores are required. These are always placed at the midpoint of the span, allowing for measured camber less ¼ inch.

The procedure for stripping horizontal beams is even easier than that for erecting. Again, depending on the beam used, a workman simply releases the end locks with the stroke of a hammer. The plate section is then freed with the help of a crow bar and slides back into the lattice section. Or one man pries off the shoulder cleats on the bents, while another loosens up the bolts on the lattice member. A third man telescopes one of the plate members, lifts the unit, and passes it down to workers below.

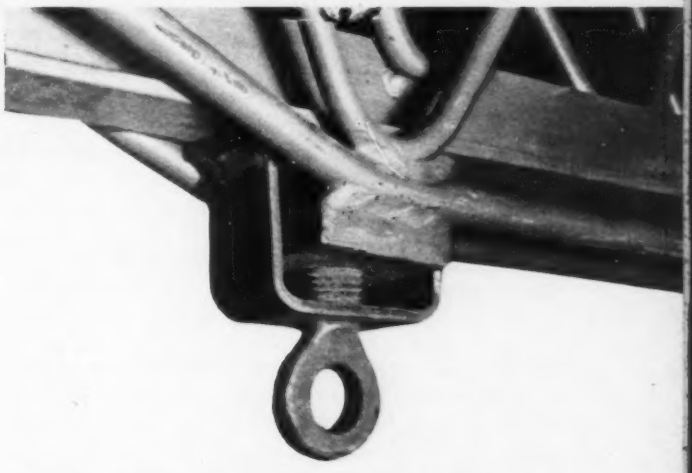
Horizontal shoring has filled a need for contractors to save on materials and to speed up work procedures on concrete construction jobs. Since the steel shores are factory-made, adjustable, and easy to handle, they save time in carrying out erection and stripping procedures, and also offer the convenience of a clear work space below.

Whether you select the horizontal shoring method on your next concrete job would depend, of course, on the size of the job and its particular requirements. However, if you want more information on hand for the day you may wish to use this system, fill in the reader service card for detailed descriptions of the three versions now on the market. END

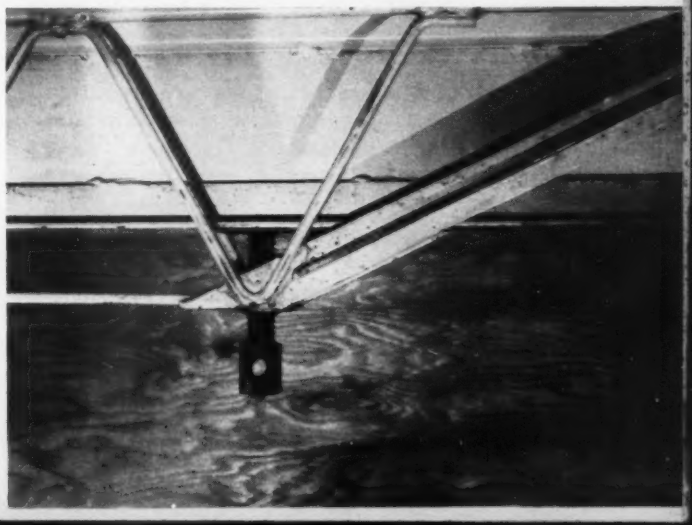
Readers who would like to have additional information on the subject discussed in the foregoing article may request it by circling No. 963 on one of the postage-paid reader service cards in this issue.



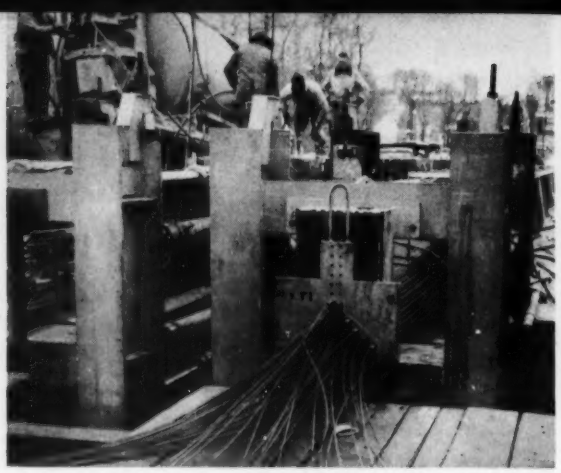
ABOVE: Horizontal beam with wedge lock. A blow of the carpenter's hammer locks lattice and plate sections together after the desired span has been reached. Similarly, the wedge lock may be opened so that the two sections glide easily back and forth for adjustment.



These two photos demonstrate the bolt and screw type of locking device for the two sections of the steel beam. Attached to the end of the lattice member, this lock may either be loosened for adjustment of the sections or tightly clamped for holding them in place with a few quick turns of a wrench.



Steam curing enclosures for girder consisted simply of tarpaulins supported on the steel forms.



View of the tensioning end of one of the beds showing the movable steel frame in the immediate foreground.

Steam Curing Proves Key to Site Casting Pretensioned Girders

Contractor's ingenuity achieves efficiency, economy and frequency of form re-use once believed possible only with a permanent casting yard.

By Charles R. Biggs and Clement D. Zawodniak*

PRODUCTION LINE UNIFORM CONCRETE STRENGTHS of 4,000 psi within 12 to 18 hours and a one-pour cycle every 24 hours for prestressed construction have been obtained for what is believed to be the first time outside of a commercial casting yard by using steam curing. The contractor, Reid Construction Company, Woodbridge, New Jersey, perfected the procedure, which included some special construction techniques, during the winter of 1956. The accompanying data have just been released.

Specifications for 18 grade-crossing bridges of the New Jersey Garden State Parkway, involving production of 324 girders, called for a minimum of 4,000 psi before detensioning and stress transfer. Thus the key factor was fast strength gain. Realizing these strengths in one day instead of 28 days was essential for successful and economical production.

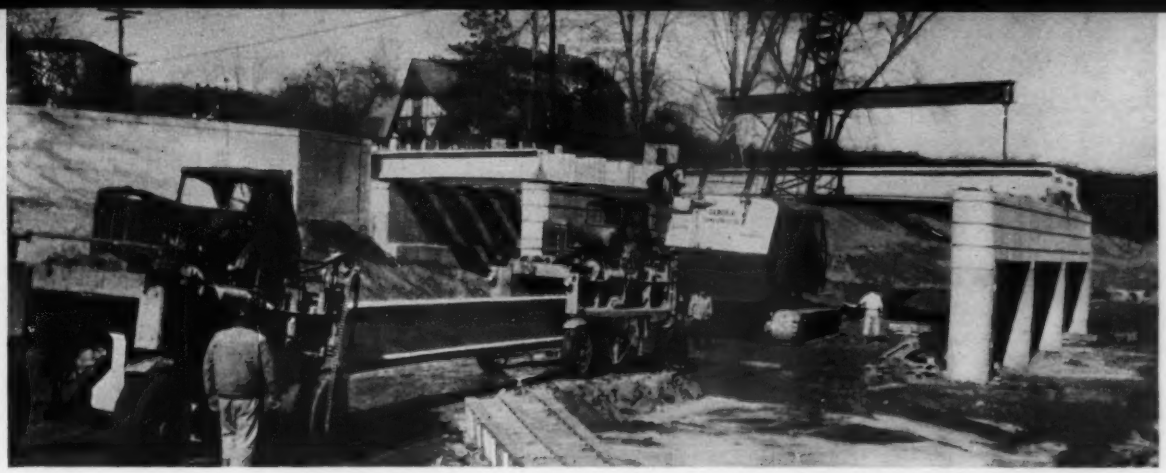
The required fast strength gain was obtained by investing in a 150-hp boiler for generating steam, a couple of lines of 3-inch pipe, two recording thermometers, and tarpaulins to form a kiln. The total cost was approximately $10,000, but the same facilities could have been rented for $500 per month.

Completed during a 15-week period, work was carried on right through the winter of 1956-57, with daytime air temperatures averaging about 30 degrees. It was essential that curing temperatures and strengths be checked closely, since relatively little was known concerning the speed of concrete strength gain when steam cured under job site conditions. Over 500 cylinders were tested and collaborative tests were made with a Swiss hammer. Consistently good confirmation was obtained throughout by the two methods.

After an optimum mix had been determined through experimentation, one six-girder pour was completed daily. Starting at 7:00 A.M. the prior day's girders were removed from one side of the two-bed casting yard built especially for this project. Then tensioning strands were pulled through twelve pre-drilled bulkheads (enclosing the ends of the six girders) and attached to a template. A truck winch pulled the template (together with the wires) to the opposite end of the casting bed. There it was dead-ended and

*Mr. Biggs and Mr. Zawodniak are respectively materials engineer and assistant materials engineer for Fay, Spofford & Thorndike, Inc., consulting engineers on the Garden State (New Jersey) Parkway Project.

FILE: Prestress



Straddle-type carriers are delivering a girder from the casting beds while a crane and crew are erecting.

an initial 400-pound stress was applied to each strand. All the cables were elongated at one time by specially-built equipment at the starting end. As two cranes positioned the forms, concrete placing followed directly behind.

Ready mixed concrete with a 3-inch slump was placed in the forms and vibrated into place. Since the closely spaced ⅜-inch 7-wire strands made it difficult to fill the lower one-third of the beam, an admixture was used to improve the concrete's workability. The w/c ratio averaged 4.8 to 5 gallons of water per bag of cement.

The admixture used has an initial retarding action which takes place largely during the first four hours. This created no problem, since it was found that an initial holding period of two to four hours was essential for the development of the concrete's potential high strength. The proper holding period was found to depend on mix and on the ambient temperatures.

Steam was introduced under the tarpaulins through ⅛-inch diameter holes spaced at 3-foot intervals along pipes on each side of the casting beds. Temperature increase was limited to one degree per minute.

Steam curing continued from noon until 6:00 A.M. the following day. Under the tarps the thermometers recorded 140 degrees F., while internal girder temperatures remained constant at about 160 degrees. Variations seldom exceeded a few degrees even when the temperatures under the tarps fluctuated considerably. On one occasion the boilers ran out of fuel in the early morning hours, and the kiln temperature fell to 40 degrees. The internal temperatures, however, showed very little change.

At the start of the cycle concrete temperatures rose slowly, and as might be expected, they also fell slowly when the steam was turned off. Experience on this project indicates that it is important to have a continuous record of the temperature range in order to be certain that the temperatures are high enough during the critical period of steam curing. It was also found that the temperature under the tarps should be at least 100 degrees, and preferably in the range of 110 to 140 degrees. The three other factors which most directly influenced the strength and quality of the concrete were rate of temperature rise in the enclosure, uniformity of temperature throughout the enclosure, and the curing time.

Production on a 24-hour cycle, with a 15- to 18-hour curing period, was of great importance, since otherwise a two-shift operation would have been essential. After various mixes with ordinary (Type I) cement were tried, it was decided to use high early strength (Type III) cement to obtain 4,000 psi strength in a 24-hour cycle. Twenty-eight day strengths exceeded 7,000 psi. Tests at 90 days showed only about 5 percent additional strength.

The 420-foot long casting beds consisted of a 12-inch slab, 20 feet wide with heavy abutments. The tensioning end was made up of two pairs of steel beams, each pair consisting of a fixed beam (near the bed) and a movable beam which is jacked against the fixed one, simultaneously tensioning all cables. Before stringing, the ⅜-inch diameter, seven-strand cables were passed through a yoke. The number of cables varied from 22 to 56, depending on the design considerations. These were secured by self-locking grips. Each strand was tensioned to 14,000 pounds or 70 percent of its ultimate strength. The casting sequence was so arranged that when concrete was being placed on one bed cables were being set on the adjacent bed. Pours were usually staggered six hours apart, permitting one set of forms to be used on both beds. This arrangement also proved to be economical for the contractor as only one crew was required to keep both beds operating at full capacity. Only three beams had to be discarded during the entire operation.

While the two-bed yard and the related equipment represented a total cost of between $250,000 and $300,000, the contractor reports that about 90 percent of this expenditure was recovered after the project was completed.

END

Readers who would like to have additional information on the subject discussed in the foregoing article may request it by circling No. 964 on one of the postage-paid reader service cards in this issue.

View of the first floor of the Wilson School in Reading, Pennsylvania, during concrete placing operations. Fibre void tubes effected a 10 per cent weight reduction, while this type of floor as a whole displaced some 200 tons of structural steel.

VOIDED CONCRETE DECKS SAVE 200 TONS OF STEEL

NOT LONG AGO in an article entitled "Revolution in Concrete" (Concrete Construction, June 1960, page 154), this magazine quoted a top-level research scientist who had expressed the view that in the next decade concrete will account for a much larger percentage of the total market for building materials than ever before. Obviously an important part of any such gain must be tallied by taking over some portion of the markets now largely dominated by structural steel.

A case in point is a school construction project in Reading, Pennsylvania, on which some 200 tons of structural steel were eliminated by the use of voided concrete decks in place of the steel frame construction originally called for.

Two structural innovations could have been employed: (1) the pan-joist system involving a relatively thin deck with monolithic parallel beams hanging downward from the deck; or (2) a voided system of concrete construction consisting of a slightly thicker deck, with a series of parallel, invisible, cylindrical voids running through it.

Voided concrete decks are constructed by placing a series of parallel fibre tubes in the forms, surrounded by reinforcing steel, and placing concrete to a thickness no less than four inches greater than the diameter of the tubes.

Final designs for the first floor and roof of the building did away with an originally planned 36,000 square feet of steel decking. Both decks are supported by the slab band method which utilizes a 14- by 24-inch monolithic concrete band running around the entire perimeter of the building, supported by steel columns on the perimeter; 38 additional steel columns are equally spaced in two rows lengthwise through the middle section of the building for support under the 60-foot wide span of the decks.

The first floor is composed of three separately placed 300-foot long concrete slabs. The two exterior 10-inch thick slabs, each 23 feet 5 inches wide, contain two rows of 6-inch diameter tubes 10 feet long placed 8 inches on center. The 16-inch thick center section is 11 feet 6 inches wide and contains one row of 12-inch diameter tubes 9 feet long placed 15 inches on center.

The roof is made up of three slightly thinner slabs. The two exterior slabs are 10 inches thick and contain the same arrangement of 6-inch diameter fibre tubes. The center slab is 16 inches thick, containing a single row of 10-inch tubes.

By displacing concrete at the neutral axis, the void tubes reduced the dead load weight of the concrete by 10 percent without reducing structural strength. At the same time, the void system made possible the elimination of an estimated 200 tons of steel decking and framing. Over 2,200 fibre void tubes were used on the project.

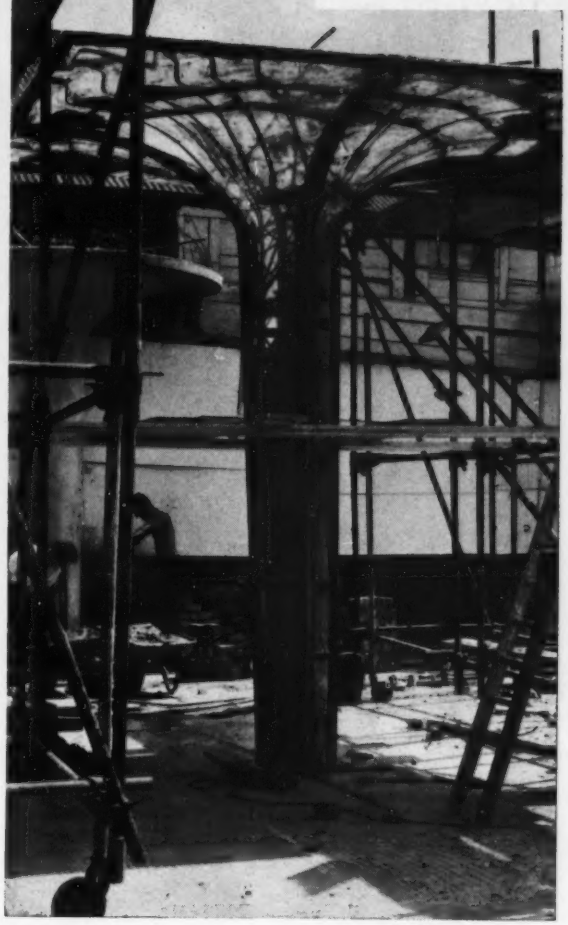
Placing concrete into forms containing the tubes as well as heavy reinforcing steel required exacting workmanship as well as a carefully designed concrete mix that would insure thorough compaction around the tubes and reinforcement without honeycombing, cracks, or cold joints. The mix design which was used produced a 3,750 psi concrete with 4½ percent air, weighing 147 pounds per cubic foot.

To achieve desired workability for placement into the intricate forms, a cement dispersing agent was used to produce 6-inch slump concrete without disturbing the critical water/cement ratio or reducing the vital 3,750 psi compressive strength. By the time the project had been completed more than 6,600 cubic yards of ready mixed concrete had been used, all of it supplied from the Reading plant of Kurtz Brothers Concrete, Inc. END

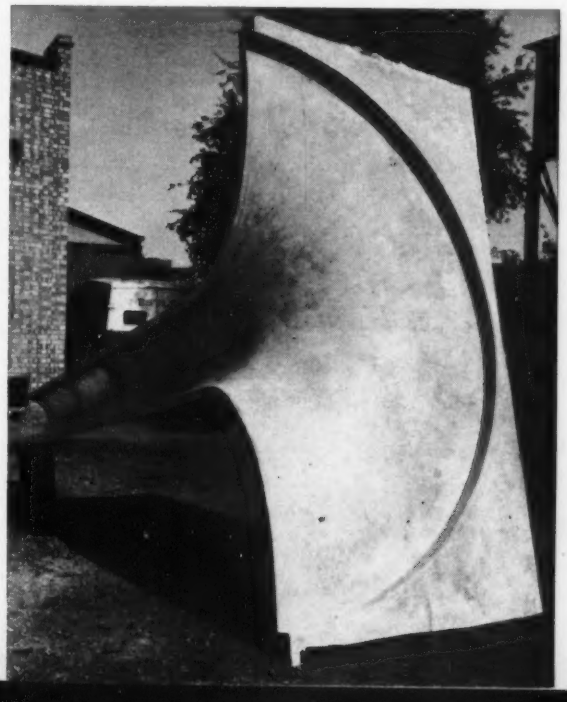
Readers who would like to have additional information on the subject discussed in the foregoing article may request it by circling No. 965 on one of the postage-paid reader service cards in this issue.

FILE: Floors

Plastic Formwork



Two of the molds form a complete column on an actual construction site. The halves are shown after having been used several times. The high degree of translucence is clearly evident. Below, the glass-fibre reinforced plastic mold for one-half of an interior column.



FORMWORK OF GLASS-FIBRE REINFORCED PLASTIC is now more than just an intriguing possibility for certain types of large site-cast concrete elements. The accompanying photographs show forms supplied for a typical contract by a British manufacturer.

The forms shown were used for interior columns in a multi-story warehouse at Gravesend on the Thames. Advantages are impressive; the molds are very light in weight, they are definitely non-corrosive, and cleaning and the use of form oil are completely unnecessary. The surface of well-compacted concrete cast in such molds is smooth and free from blemishes; once the water has receded from the surface during normal hardening the suction seal between the plastic and concrete is broken and the mold will simply fall away from the surface when the couplings are released. Resistance to abrasion is good, and when suitable steel rod reinforcement is included the forms will not distort. Assembly and dismantling can be rapid and the number of possible re-uses is high.

Production of the molds is said to be comparatively simple. First a full-scale plaster model of the desired element is made. For columns and other fully symmetrical shapes such a model obviously needs to be of only one-half the final object. The model then provides the positive shape for the negative form. To prevent adhesion of the form to the model, the plaster is painted with three coats of shellac, and is then wax polished and spray coated with polyvinyl alcohol. Building-up stages for the mold consist of applying a thick layer of polyester resin over the surface by brush, onto which glass-fibre cloth is pressed firmly by hand roller. This is continued in alternate layers until the desired thickness is reached. Glass-fibre cloth weighing 1½ ounces per square foot is normally used.

For general contract work the final mold usually weighs about 6 ounces per square foot. Steel rods and strips are inserted during building as necessary for reinforcement, while light steel angles provide the flange reinforcement. The final step consists of buffing the internal surface to a smooth finish. For the column molds shown the two halves were fastened in place by ⅜-inch bolts through the flanges at 9-inch centers.

The manufacturer of the molds pictured here will provide formwork for any project. Stock inventory now covers molds for single-story demountable buildings, staircases, flooring, water towers, smoke stacks, and a multitude of smaller items such as fence posts. Costs are fairly constant despite the differences in application; they range between $2.50 and $3.50 per square foot. END

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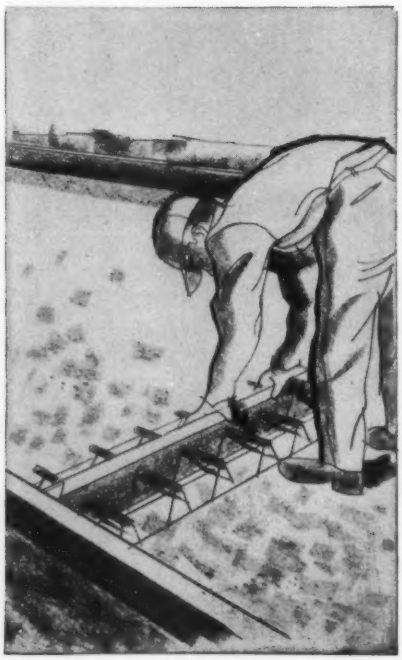

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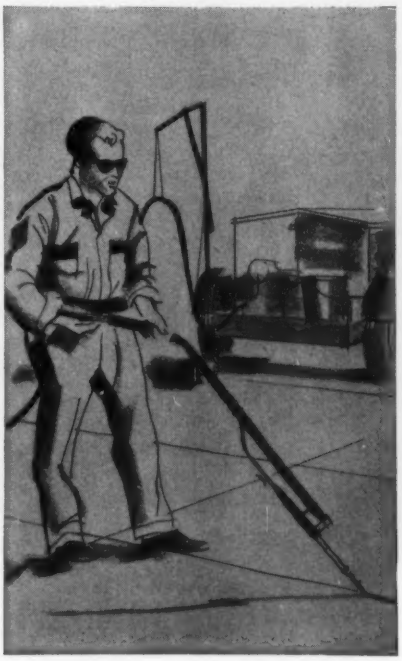

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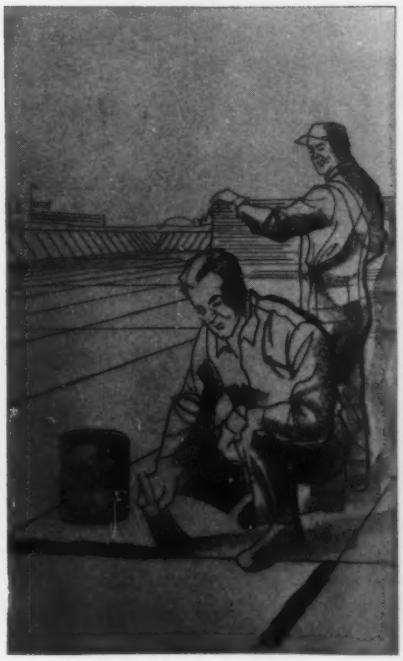

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apprentice training

Sir:

The operation and maintenance of The Cement Mason Apprentice Training Program in the Youngstown area is the sole responsibility of the cement masons and the concrete contractors; it is a joint responsibility shared equally by both groups. If the program is successful, credit goes to both, but if it fails, both must accept the responsibility for the failure. The program as it stands now is perilously close to complete collapse. Little sustaining interest in the program is being shown by the joint apprenticeship committee; the program has been pulled along by its heels for the last two years by three or four people. No interest is being shown by the rest of the local's membership or the other concrete contractors; almost total indifference to the employment and training of apprentices on the job is constantly indicated. This disinterest is reflected among many of the apprentices through poor class attendance, poor morale and actual drop-outs from the program, because their future in the trade looks anything but bright.

All of the other functioning apprentice training programs in the area have applicants for training standing in line. At the last meeting of the Cement Masons Joint Apprenticeship Committee when a quorum was present, it was voted to start another class of new apprentices. To date, not one application has been received. This can be passed off by saying that the work is hard, layoffs are frequent and that young people today are only interested in the soft job, the fast buck and security. But I believe that the reasons for this absence of young men interested in learning this trade go much deeper. I believe that qualified potential applicants can sense a lack of pride in the industry by those who make a living in it—both the concrete contractor and the cement mason. In countless instances, the son follows his father or brother or uncle into his trade or profession. Is this true in our trade? How many have deliberately steered a son or nephew away from the trade?

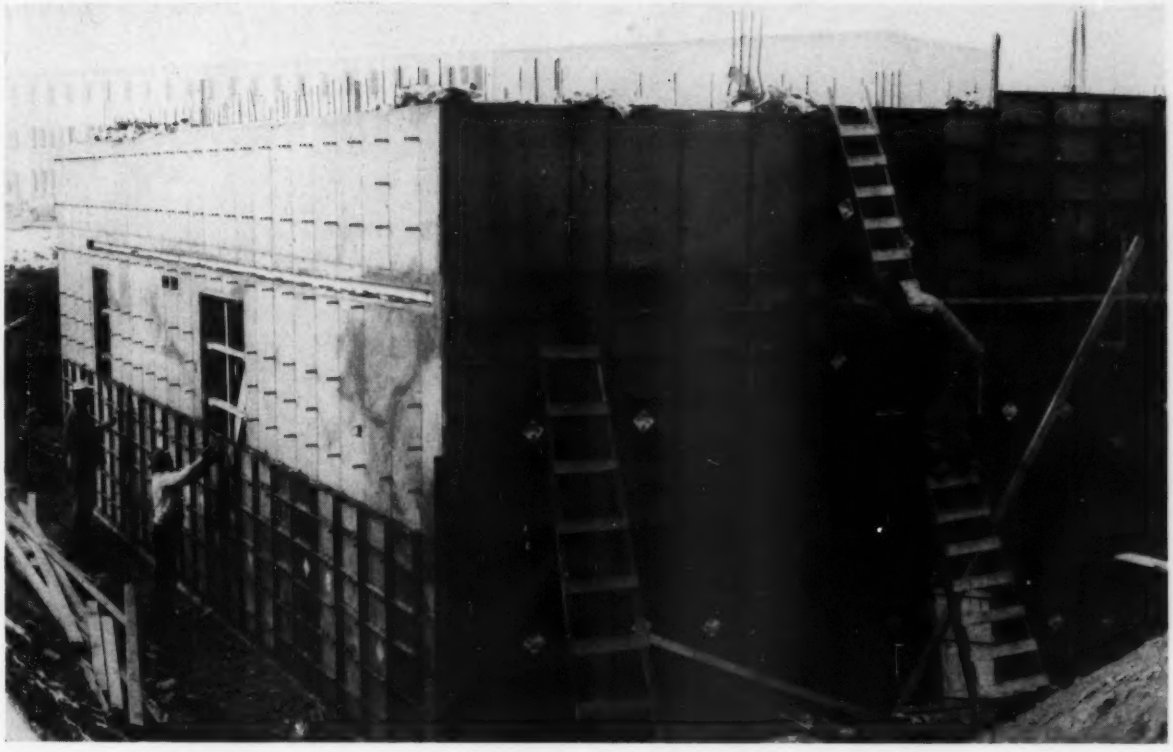
Qualified potential applicants for training can quickly determine a general feeling among those in the industry that conditions won't improve and that nothing can be done to improve them. How many have voiced this opinion or have heard it voiced among others in the industry? Sadly enough, it is heard every day among concrete contractors. Prospective applicants for training can easily learn whether the Golden Rule prevails in an industry or whether the "Brown Rule" (stick it into others before they stick it into you) predominates. Any normally intelligent young person will avoid the latter situation because he knows that his inexperience will make him a prime target. Doesn't the Brown Rule seem to prevail generally in this industry among contractors and masons alike?

These I believe are the reasons why applicants are not standing in line to grab the opportunity to learn this trade. Lack of interest, lack of pride, lack of a willingness to improve conditions, the application of the Brown Rule--these are the things that keep qualified young men away in droves and these are the attitudes that feed upon themselves, reproduce themselves like rabbits and bring total disintegration to an industry. Who suffers in this situation? Not the potential applicant who choses another line of work, nor the architect, slag producer, dealer, cement manufacturer or the broker. It is the cement mason and the concrete contractor, the people who have invested their time and money and life's energy in this industry, who will suffer.

The contractor and the mason can work this industry for the fast buck. They can demonstrate and foster attitudes of disinterest, lack of pride, hopelessness and the cynical Brown Rule; and they can reap a harvest of cutthroat competition for jobs among contractors and masons alike, as well as the disrespect and distrust of the rest of the construction industry and the community. This can and will happen unless the cement mason and the concrete contractor jointly realize the seriousness of this situation as it now exists and give something in return to our industry.

Our industry, if it is to survive and grow, needs a sound apprentice training program. Such a program requires a steady supply of able and qualified young men. To attract such people to the industry, the concrete contractor and the cement mason must, I am firmly convinced, make a drastic change in prevailing attitudes; there must be developed a sincere and long range interest in jointly improving conditions in the industry; there must be developed, jointly, a very real feeling of pride in the work and in the industry; there must be the understanding that something can be done to better conditions, and there must be the willingness, time and energy to work at it. There is no problem on the face of the earth that does not have a solution. And finally and very frankly, there must be a reappraisal of values. The Golden

(continued on page 262)

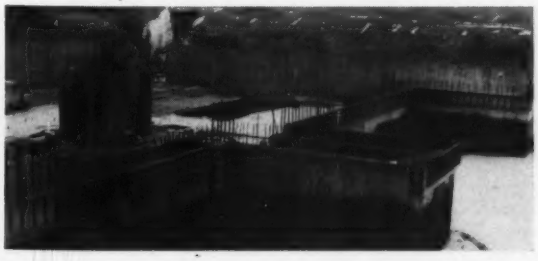


Symons Prefabricated Forms Saved ⅓ Labor on Walls Alone

Savings Most Apparent When Forms Were Set and Stripped

When Garff, Ryberg & Garff, Salt Lake City construction firm, was awarded the Brigham Young University administration-general services building and new library at Provo, Utah, its first job was to solve the forms problem.

The contractor had about 15,000 square feet of Symons Wood Forms that had seen much use but were still in excellent condition for below ground forming. More forms were needed. These could have been additional wood forms. However, Earl Jensen, President of Contractors Equipment & Supply Company, (Conesco), Salt Lake City, Utah, the firm that sold the original wood forms, when contacted, was quick to point out that Symons now manufactures Steel-Ply Forms. Also, they have come into wide general use and offer more advanced economies than the wood forms, plus being interchangeable.



Designed by the Salt Lake City architectural firm of Fetzer & Fetzer.

Symons Forms efficiency showed up right at the start of the administration building. Work with a 12-foot-high wall with numerous window openings, 6 carpenters and 1 helper formed 12,120 feet of contact area. The job was done in 9 working days. In the same 9 working days, 168 cubic yards of concrete were placed, leaving only 3,120 square feet of forming area unpoured.

Labor savings were significant. On walls alone, about one-third the labor normally used in building and maintaining forms had been saved.

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MORE **SAVINGS** FROM **SYMONS**

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Rule has worked since men came down from trees and it will work in this or any other business; it is the only rule by which men can hope to build a better industry or a better life.

I'm well aware that I have laid myself open to the cynical horse laugh; this is the chance that anyone takes who speaks or writes sincerely and frankly about a matter which deeply concerns him. During the past six years, I have spent a lot of time and energy through the Concrete Contractors Association, through the Concrete Construction Council, through joint apprenticeship committees, joint adjustment boards, joint wage committees and through the state association of concrete contractors to do what I could to raise the stature of the industry in the eyes of all who view it, whether from within or without. The potential accomplishments of a strong united concrete construction industry are absolutely unlimited; the benefits and conditions which the cement mason and the concrete contractor can gain by sincerely working together on common problems and common objectives can be the envy of all segments of the construction industry and the aim of other industries as well.

I am deeply concerned about the future of this industry because I feel that it would be almost a crime to let this tremendous potential go to waste because of indifference, disinterest and the abandonment of integrity. Nobody is going to hand us a better way of life; nobody can. Nor can any of us achieve it alone. It's our joint responsibility to ourselves and to our industry to work together for our common good.

This has not been a pleasant letter to write, but if it results in some serious thinking and some constructive action, it will have been well worth the effort.

CLARENCE C. HANNA
Executive Secretary
Concrete Construction Council
of Mahoning Valley
Youngstown, Ohio

We believe that Mr. Hanna has ably and accurately described some conditions in our industry which are widely prevalent. Readers of Concrete Construction are invited to comment for publication by writing directly to the magazine, or to explore the subject further by corresponding with Mr. Hanna at Room 5, 211 North Champion Street, Youngstown, Ohio.

EDITOR

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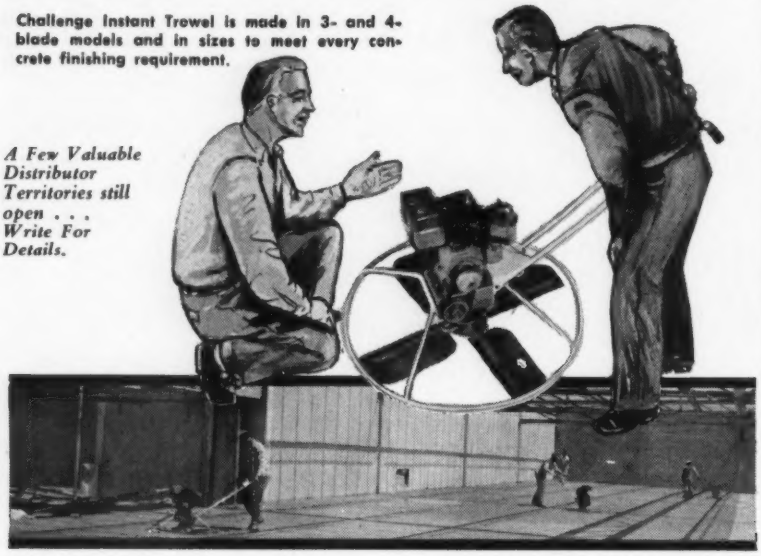

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If you're trying to build better, longer-lasting concrete highways, contact your nearest CF&I sales office before starting your next job. Our engineering staff will be happy to discuss your reinforcing requirements with you. That's one of the meanings of our Corporate Image — the best of service to the concrete industry.

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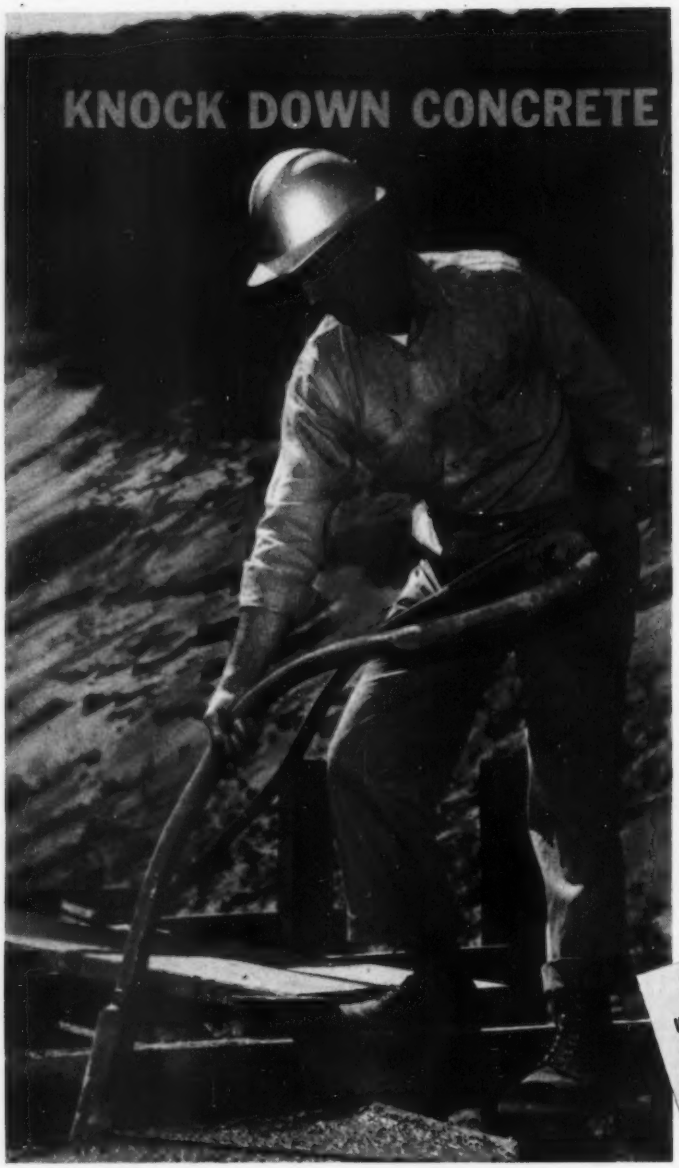

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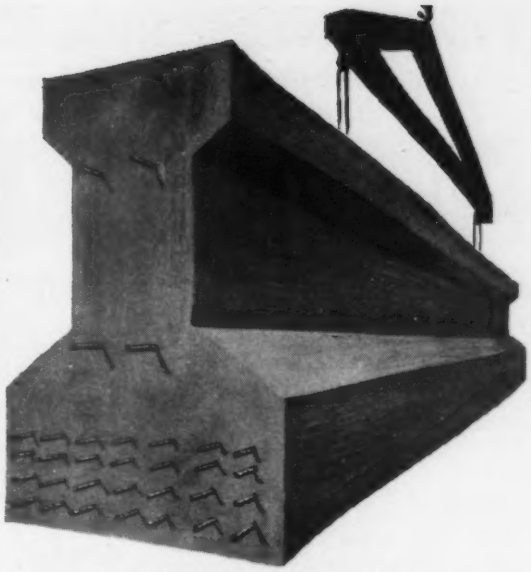

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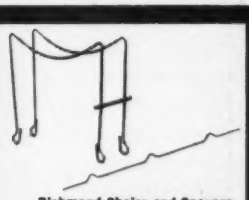
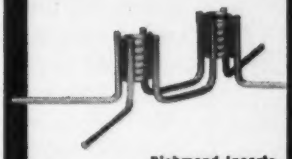


Richmond Chairs and Spacers for void supports and spirals in prestressed piles and beams.



Richmond Inserts for connection of cast-in-place diaphrams to prestressed girders.

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CAPSULE COMMENTS like these are good for a chuckle . . . but it's a mistake to swallow 'em whole.

Specialists as a rule are good, honest, stalwart, upstanding men.

I'm a specialist myself, with one medicine in my bag. Calcium chloride . . . the stuff that cures many of the ailments that plague concrete men.

Take workability. Add calcium chloride to your mix, and you up workability by about 40%. Your concrete leaves the mixer cleaner, fills forms quicker, flows faster in chutes, and requires less labor for pointing and finishing. This is not mere theory. I've seen it happen on too many jobs to count.

Then, there's set time. Calcium chloride cuts it in half . . . even more in cold weather.

And final strength. Concretes containing calcium chloride have greater strength at all ages than plain concretes. Tests by the National Bureau of Standards, and others, bear this out.

I could fill a fistful of columns with facts about chloride in concrete . . . and probably will. But if in the meantime you'd like more information, write for our free pamphlet, "Better Concrete in Every Season with Wyandotte Calcium Chloride." *Wyandotte Chemicals Corporation, Wyandotte, Michigan. Offices in principal cities.*

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Concrete: The Vision of a New Architecture. *By Peter Collins. Published by Horizon Press, Inc., 220 West 42nd Street, New York, N. Y. 307 pp. Illus. $12.50.*

The history of concrete presents one of the most revealing aspects of the search for a new architecture. Nineteenth-century attempts to grapple with this subject were generally fruitless, since, until the invention of reinforced concrete frame construction, the problem could only be discussed in terms of ornament. But the many arguments on the esthetic possibilities of concrete throw an instructive, and at times entertaining light on the Victorian mind, and contribute useful knowledge on a hitherto unexplored aspect of the history of contemporary design.

This book presents a detailed account of the structural inventions by which the material was developed from the end of the eighteenth century onwards, and gives a fully documented survey of the many opinions then expressed. The second half of the book is devoted to a study of the work and theories of Auguste Perret, whose concrete buildings, such as the church of Notre Dame du Raincy, made him widely regarded as the leading figure in this particular field of research, from the beginning of the present century until his death in 1954.

The author worked for a number of years as an architectural assistant in the offices of Auguste Perret's pupils in France and Switzerland, and lectures on the history of architecture at McGill University, Montreal, where he is an associate professor. Many of his views will appear controversial, but they should interest all those concerned with contemporary architecture.

Soil Stabilization With Asphalt, Portland Cement, Lime and Chemicals. Bulletin 241. *Published by Highway Research Board of the National Academy of Sciences—National Research Council, 2101 Constitution, Washington, D. C. 126 pp. Illus. $2.40.*

Six papers dealing with stabilization of poor soils were presented at the 38th annual meeting of the Highway Research Board. Subjects covered are contained in this bulletin under the following titles: Soil-Organic Cationic Chemical-Lignin Stabilization by J. M. Hoover, D. T. Davidson, J. J. Plunkett and E. J. Monoriti; Water in Cutback Asphalt Stabilization of Soil by R. K. Katti, D. T. Davidson and J. B. Sheeler; Chemical Treatments for Surface-Hardening of Soil-Cement and Soil-Lime-Fly-ash by R. L. Handy, J. L. Jordan, L. E. Manfre and D. T. Davidson; Improvement of Soil-Cement with Alkali Metal Compounds by T. W. Lambe, A. S. Michaels and Z. C. Moh; Fine-Grained Soil Stabilization with Phosphoric Acid and Secondary Additives by A. S. Michaels and F. W. Tausch, Jr.; Use of Calcium Chloride for Soils Base Stabilization in Maryland by J. Eldridge Wood.

Green Guide: The Handbook of New and Used Construction Equipment Values. *Published by The Pacific Appraisal Company, 735 Industrial Road, San Carlos, California. 277 pp. $24.00 (includes supplemental bulletins and individual reports on items not in Master Price Book).*

This book contains values of over 800 different makes and models of new and used construction equipment. All types of equipment such as air compressors, conveyors, concrete buck-

ALPHA

BETTER CONSTRUCTION THROUGH BETTER USE OF CEMENTS

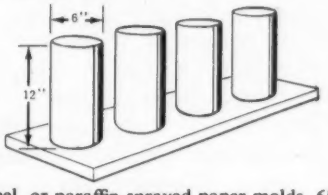
news and notes from the field

CONCRETE TEST CYLINDERS—the right way to make them

A concrete test specimen seldom seems very important at the time it is being made. However, if trouble develops with concrete on a job, the test specimen immediately becomes a critical factor, regardless of the size of the project.

A concrete producer can guarantee concrete strength only if test specimens are made and cured according to standard methods. Concrete compression tests are made to determine concrete quality. If curing conditions, methods of sampling and methods of casting are allowed to vary, strength results are worthless because one can seldom determine whether a low strength is due to poor quality concrete or poor practices after concrete left the ready mix truck. For reliable test results, the following test procedures should be followed:

1. Use only non-absorptive molds

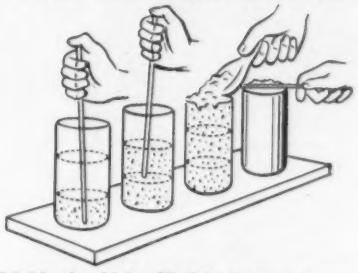


Steel, or paraffin-sprayed paper molds, 6" in diameter by 12" high, are usually used for casting concrete cylinders in the field. Before filling, they should be placed on a smooth, firm, level surface. A single strength test is generally defined as consisting of an average of 3 standard test specimens. Therefore, be sure to make at least 3 cylinders for each age test—usually 7 and 28 days.

2. Take sample from 3 parts of load

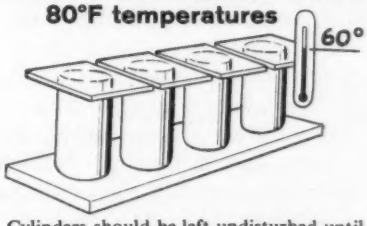
A sample should be obtained from at least 3 parts of the load and taken directly from the truck or mixer discharge. Before filling the molds, the individual portions of the sample should be thoroughly re-mixed in a large flat pan, wheelbarrow or on other clean, non-absorptive surface.

3. Fill molds in 3 layers and rod each layer 25 times



Molds should be filled in 3 equal layers, and each layer rodded uniformly 25 times with ⅝" *bullet-pointed rod.* When rodding upper layers, the rod should just extend through into the layer underneath. *All* molds should be filled uniformly—that is, place and rod the bottom layer in all samples, then the 2nd layer, etc. The 3rd layer should contain an excess. After tapping sides of mold with rod, strike off excess with trowel.

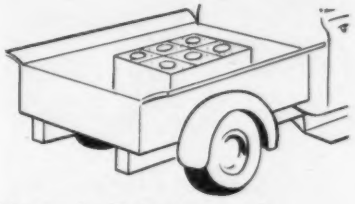
4. Let cylinders stand from 12 to 24 hours in 60° to 80°F temperatures



Cylinders should be left undisturbed until they have hardened enough to withstand handling—from 12 to 24 hours after casting. Tops should be covered with glass plates, oiled paper, wet burlap or similar material to prevent loss of moisture. The temperature should not drop below 60° or rise above 80°F *where cylinders are stored.* Cylinders left on the job for several days at low or high temperatures will give erratic results *unless carefully protected.*

5. Cure and handle cylinders with care

After setting for 12 to 24 hours, cylinders should be placed in moist curing at 70° or sent to a laboratory for standard curing. Careful handling is still necessary since cylinders which are allowed to rattle around in a box, or the back of a car, or pickup, can suffer considerable damage. Use sawdust or similar material for cushioning.



Use a bullet-nose rod

The purpose of rodding test cylinders is to compact the concrete and make it free of the large air voids which reduce strength. Too many people reach for the handy piece of reinforcing steel to rod the concrete. Some just kick the mold instead of rodding. It has been found that the bullet-nose ⅝" rod does the job best for two reasons:

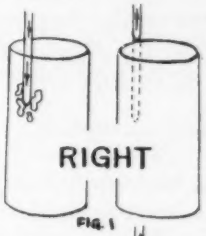


FIG. 1

a. It slides over the aggregates (See Fig. 1) instead of pushing them along as with a blunt rod and leaving large voids as the rod is withdrawn (See Fig. 2).

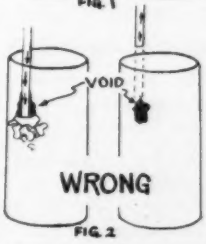


FIG. 2

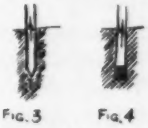


FIG. 3 FIG. 4

b. As the rod is withdrawn, the concrete should close smoothly after it. The bullet-nose encourages this as in Fig. 3, while a square or irregular shaped tip performs as shown in Fig. 4.

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ets, concrete spreaders, crushers, cranes, electric motors, header boards, loaders, graders, stationary mixers, truck mixers, pumps, rollers, tractors, trenchers, and welders are included. Information on each machine includes the new replacement cost, average retail value, and average wholesale value by year of manufacture.

The guide was developed over a five-year period by specialized professional appraisers working with an advisory council of machinery dealers, contractors, bankers and insurance brokers. All of the factors which influence value such as depreciation, appreciation and obsolescence have been taken into consideration.

Bridges: Bearing Pads, Foundations, Scour and Waterways. Bulletin 242. *Published by Highway Research Board of the National Academy of Sciences—National Research Council, 2101 Constitution, Washington, D. C. 77 pp. Illus. $1.40.*

This bulletin contains six papers presented at the 38th annual meeting of the Highway Research Board, the first four sponsored by the Committee on Bridges and the other two sponsored by the Committee on Surface Drainage of Highways.

"Elastomeric Bridge Bearings," by R. L. Pare and E. P. Keiner, and "Report on Tests of Neoprene Pads Under Repeated Shear Loads," by A. M. Ozell and J. F. Diniz, describe research on elastomeric (rubber-like) materials which show considerable promise of being particularly suitable for seating precast bridge girders.

"Tests of Steel Tubular Piles Driven Near Saigon River, Vietnam," by D. Allan Firmage, and "A Rational Method for Determining Safe Foundation Pressures and Embankment Stability," by S. Lifsitz, present two rather widely different engineering approaches to the problem of safe foundation design, possibly accounted for by difference in geology of the construction locations.

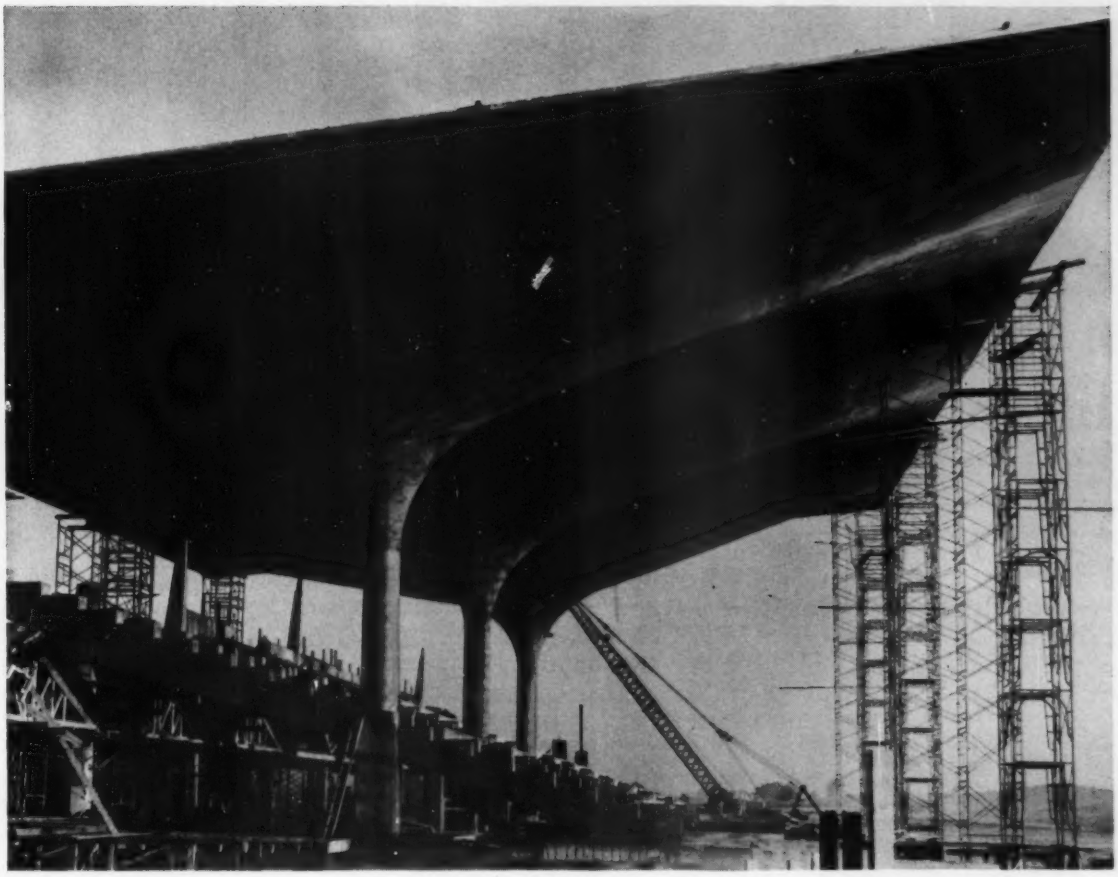
"The Use of Backwater in Designing Bridge Waterways," by Joseph N. Bradley, and "Laboratory Observation of Scour at Bridge Abutments," by H. K. Liu and M. M. Skinner provide new information which may guide engineers in shaping and positioning bridge waterways and in designing adequate protection against damaging erosion.

Highway Research in the United States—Needs, Expenditures and Applications. Special Report 55. *Published by Highway Research Board of the National Academy of Sciences-National Research Council, 2101 Constitution, Washington, D. C. 119 pp. $2.80.*

This document presents the report of the Special Committee on Highway Research Priorities. It defines 19 broad areas of highway research, each of which is adjudged to rate A-1 in importance and urgency. On the premise that the program would be extended over four to five years, total costs are estimated at $34 million. For each area listed, the report suggests in general terms appropriate sources of financing.

Included also are three closely related reports prepared by the staff of the Highway Research Board. Appendix A provides a state-by-state summary and analysis of 1958 expenditures for highway research. Appendix B describes each of the 101 proposals considered by the Special Committee. Appendix C contains 348 citations of uses made of research discoveries, prompting the Special Committee to inquire, "Without research today, what will tomorrow's practice be?"

Owner: Scioto Downs, Inc., Columbus, Ohio; Architect: Kellam & Foley, Columbus, Ohio; Structural Engineer: Gensert & Williams, Cleveland, Ohio; General Contractor: Sheaf Construction Co., Columbus, Ohio; Concrete Supplier: Anderson Concrete Corp., Columbus, Ohio.



PLASTIMENT speeds placement of thin shell concrete

The nation's largest hyperbolic paraboloids roof the grandstand for new Scioto Downs Race Track in Columbus, Ohio. Each 400-ton shell is 60 x 116 feet and stands on a single column. 6½- and 7-bag mixes were used with slumps at 2" or less.

Plastiment provided low slump workability and stability during placement on the steeply sloping surfaces.

Early strength gains enabled the contractor to strip forms in 7 days. Strengths in 7 days averaged 3600 psi for the 6½-bag mix and 4700 psi for the 7-bag mix. Plastiment was used in proportions varying from 2 fluid ounces to 4 fluid ounces per sack of cement to provide uniformity with varying ambient temperatures.

Plastiment features are detailed in Bulletin PCD-59. Ask for your copy. District offices and dealers in principal cities; affiliate manufacturing companies around the world. In Canada, Sika Chemical of Canada, Ltd.; in Latin America, Sika Panama, S. A.

Sika SIKA CHEMICAL CORPORATION
Passaic, N. J.

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products

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prefabricated stair form 926

Contractors can erect complete forms for riser, tread, and stringer and place reinforcing all in one quick operation with a prefabricated metal form for reinforced concrete stairs, complete with metal riser fronts, reinforcing and temperature rods and plate channel or exposed stringers, all welded into a rigid one-piece unit. Each unit is designed to exact specifications of the architect, and production is postponed until approval has been received from both architect and contractor. Units are shipped to the job-site completely assembled, with areas to be exposed after installation painted with a rust inhibitive prime coat. In the picture side and soffet forms have been removed after placing and curing of concrete. Stairbuilders, Rt. 66, McCook, Ill.

weather-proof coating 927

A thiokol-based coating for concrete, wood and metal surfaces offers protection for roofing and decking against all kinds of weather, and is said to be resistant to fresh and salt water, detergents and petroleum products. Available in gray, tan or green, the material's flexibility allows it to stretch or contract over cracks, according to the manufacturer. It may be treated with abrasive particles for non-skid surfaces. Chem Seal Corp. of America, 12910 Panama St., Los Angeles, Calif.

epoxy handbook 928

A 32-page handbook on thiokol epoxy adhesive details field tested application methods for bonding concrete—surface preparation, equipment required, mixing procedures, curing and use of solvents in the adhesives. It contains pertinent facts and figures for use in the repair and maintenance of highways, buildings, bridges, airport runways, dams, sidewalks and driveways, and tables on the effect of temperature on curing time. International Epoxy Corp., 501 N. E. 33rd St., Fort Lauderdale, Fla.

admixture 929

A 12-page booklet describes an admixture for concrete and mortar that accelerates hardening, increases early strength and reduces water requirements, producing uniformly better concrete in shorter time at lower cost according to the manufacturer. Material is a clear concentrated solution of set accelerating agents in combination with a powerful surface active agent to reduce water requirements. Sonneborn Chemical & Refining Corp., Building Products Div., 404 Park Ave., S., New York, N. Y.

epoxy compounds 930

A bonding agent, Epoweld 812, permits casting of a thin layer of new concrete directly over uncured concrete with a permanent bond. Epoweld 813 is a non-sagging structural adhesive for patching and filling overhead and vertical areas. A protective coating, Epoweld 820, when mixed with aggregate, produces non-skid surfaces and is especially recommended where high resistance to corrosion is important. Coast Pro-Seal & Mfg. Co., 2235 Beverly Blvd., Los Angeles, Calif.

testing apparatus 931

Digest No. 2 contains 16 pages devoted to testing apparatus relating to soils, bituminous, concrete and general testing. Pocket penetrometers, miniature compaction apparatus, pocket size compression tester and piston sampler, drilling rig for soil testing and hydraulically operated soil sample ejector are among the items described. Mobile truck or trailer laboratories for on-the-job testing are included. Testlab Corp., 3398 N. Milwaukee Ave., Chicago, Ill.

drilling concrete 932

Methods of drilling concrete either with or without reinforcing rods, or any other type of masonry, together with the equipment used in these drilling processes, are all shown in detail in a new catalog. Complete descriptions of both dry dustless drilling and of wet dustless drilling, in all types of masonry to any depth, with holes up to 14 inches in diameter, are explained and illustrated. New England Carbide Tool Co., 55 Commercial St., Medford, Mass.

FLEET OF TRUCK MIXERS maintains steady concrete production for the spreader, finishing machine and longitudinal finisher on North-South 422 Freeway.

State's first limited access freeways paved with ready mixed

THE INITIAL LEGS of New Mexico's first controlled access state highways, North-South 422 and Coronado Freeway, at Albuquerque, were both paved with ready mixed concrete. A total of 17,290 cu. yds. of ready mixed concrete was produced to State Highway specifications and delivered on maintained schedules of up to 948 cu. yds. (1600 lin. ft. of slab) a day. Both jobs are 4-lane divided highways, 24′ x 8″ on each side of the median dividers.

Increasing use of ready mixed concrete for paving highway slab (it has long been preferred for highway structures) has resulted from demonstrated ability to meet the requirements of both highway engineers and paving contractors. Typical requirements include the ability to discharge 2″ slump concrete at the rate of a cubic yard per minute and to maintain a steady production flow (an hourly output 50% greater than that of a 34E dual drum paver is reasonable scheduling). A fleet of truck mixers also has the advantage of being able to deliver concrete simultaneously to more than one location on a paving job. And use of ready mixed concrete relieves the contractor of the need to set up a batching plant, stockpile materials and haul and mix on the job.

Highway standards are high standards. State Highway Departments, in increasing numbers, specify that ready mixed concrete be processed in truck mixers of certified design, capacity, mixing speed and water control accuracy.

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MIXER
MAXIMUM CAPACITY
CERTIFIED BY THE TRUCK MIXER MANUFACTURERS BUREAU TO COMPLY WITH ITS STANDARDS FOR TRUCK MIXERS AND AGITATORS AS APPROVED BY THE N.R.M.C.A.
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Westinghouse Transit Mixer Division
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Whiteman Manufacturing Company
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Willard Concrete Machinery Co., Ltd.
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Worthington Corporation
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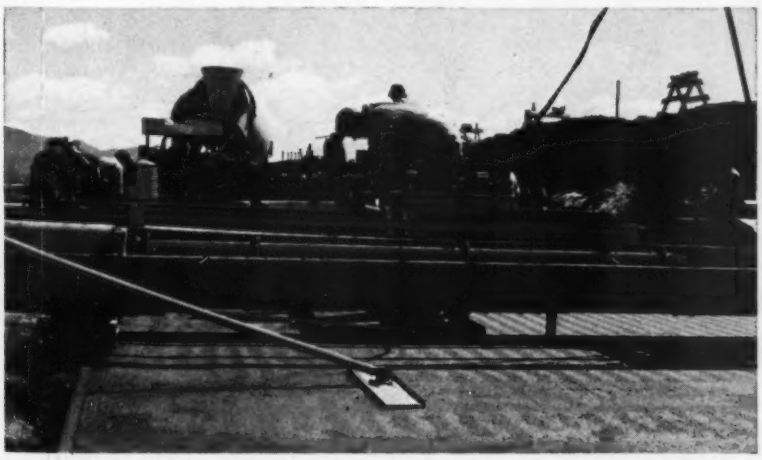

STARTING THE DAY'S RUN. Concrete is a 6½-sack mix with 1½% air entraining additive. Specifications called for 4,000 psi at 28 days. Contractors: Allison & Haney, Inc., (North-South 422) and Longenbaugh & Coe, Inc., (Coronado) both of Albuquerque. Project engineers for New Mexico State Highway Dept.: Walter Brown and R. E. Long.

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products

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maintenance coating 933

Nox-Crete is recommended by the manufacturer as a spray coating for all mobile construction equipment to eliminate hardening of concrete. It is also recommended for use on accessories such as form clamps and ties, on small hand tools, and for corrugated fiber board forms to facilitate stripping without sticking. Universal Builders Supply Co., 787 United Nations Plaza, New York, N. Y.

repair material 934

Worn concrete or wood floors, indoors or out, can be resurfaced or patched without long close down periods with a repair material which is said to be durable, economical and easy to apply. Material gives almost complete resistance to abrasion and shock, and can be used even on jet runways according to the manufacturer. Monroe Co., Cleveland, Ohio.

integral concrete colors 935

Swimming pool decks, driveways, patios, concrete walls, parking areas may be permanently colored by the addition of color material to the ready mix. Color in concrete will reduce the glare caused by sun and will lend beauty and harmony in color to areas surrounding buildings. A folder illustrates the colors available from Frank D. Davis Co., 3285 East 26th St., Los Angeles, Calif.

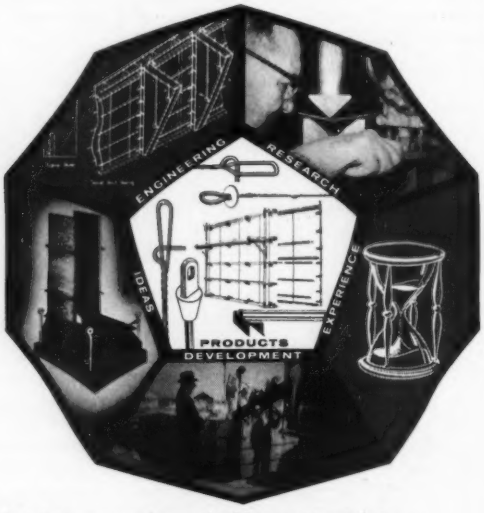
crack sealer 936

Rubberized liquid sealer for cracks in concrete pavements is said to prevent water penetration and subsequent freeze-thaw damage. It is reputed to greatly increase pavement service life and to enhance appearance. The product is also claimed to be ideal for sealing floors and parking decks against crack leakage. It is recommended for use in all cracks less than ⅜ inches wide. Maintenance, Inc., Wooster, Ohio.

reinforcing bars 937

A 12-page pamphlet lists American manufacturers of standard ASTM concrete reinforcing bars with photographic reproductions of bars showing mill marks identifying producer and location of mill. A listing of applicable ASTM specifications and a chart showing standard size and weight data are included. All bars shown meet the requirements of Federal specifications, for use by all Federal agencies and the American Association of State Highway Officials. Concrete Reinforcing Steel Institute, 38 S. Dearborn St., Chicago, Ill.

Results don't "just happen" with Gates Forming



It's no accident that more and more builders are turning to Gates Forming Systems for results that can be counted at the bank. Behind these results is Gates' unique combination of ideas, engineering, research and experience... constantly at work to develop the products and techniques that prove "right" for every type of concrete forming... large or small.

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shoring frames 938

Heavy duty shoring frames, capable of sustaining loads up to 10,000 pounds on each leg, are fully described in bulletin PSS-51. The bulletin also gives details on the unique interchangeability of specially designed U-heads, sprockets, adjustable legs and base plates. The Patent Scaffolding Co., 38-21 12th St., Long Island City, N. Y.

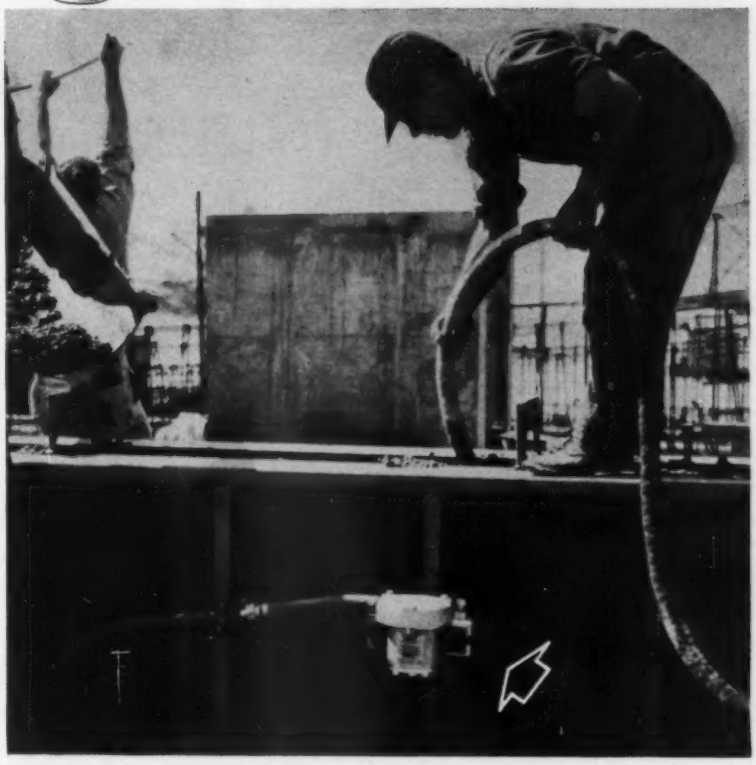
bending machines 939

A complete line of rotary benders for the forming of tube, pipe, bars, structural shapes, and channels from steel, stainless steel, copper, brass and aluminum are described in a catalog. These benders range from hand to fully automatic hydraulic benders, size range from ¼ inch O. D. tube to 17 inch O. D. pipe. Wallace Supplies Mfg. Co., 1300 Diversey Parkway, Chicago, Ill.

airport-highway forms 940

Dual duty airport and highway forms are designed so that one or two sizes may well handle all paving form requirements for highways as well as airports. Stake pockets and wedges are designed and located so that either side of the form can be used upright. Treads on each side permit use of finishing machines with forms in either position. Forms are equipped with a cam-locking principle which is said to facilitate form setting, provide perfect alignment, and assure rigidity regardless of vertical or horizontal thrusts under machine weights. Heltzel Steel Form & Iron Company, Warren, Ohio.

Just 1½ oz. of oil
...LASTS A MONTH!



Viber internal and external vibrators in use in prestress yard. Photo shows Model TV5 external vibrator on form.

NEW TURBOVIBER®
...fast, powerful vibration for

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- precast
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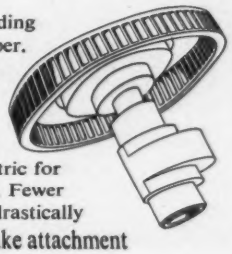
One simple turbine rotor—no vanes or cylinders, no sliding friction—supplies the power for the new Viber TurboViber. Exceptionally high frequency of 10,000 rpm or more exerts impact action of well over a ton.



No motor lubrication ever! No line oilers required! Only a few cents worth of oil lubricates sealed eccentric for a month or more under normal operating conditions. Fewer parts mean simplified servicing and longer life with drastically reduced operating costs. Five different mountings make attachment easy for any job application.

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curing compounds 941

Concrete curing compounds, 100 percent resin base, white pigmented, and wax resin base types, are described in folder 1415. Uses and specifications are included, as well as data on a semi-automatic hand sprayer for application of the compounds. A. C. Horn Companies, 750 Third Ave., New York, N. Y.

adjustable wall forms 942

Featuring modular system sizes, these concrete forms can be used vertically or horizontally. Heavy gauge steel forms insure uniformity. Water-proof plywood is attached to forms with split rivets to make repair work easier. Flexibility is increased through snap-off or pull-out ties. Outside corner forms, adjustable to wall thickness, require fewer filler sizes, according to the manufacturer. Biersach & Niedermeyer Co., 1937 Hubbard St., Milwaukee, Wisc.

abrasive compound 943

Folder describes a synthetic latex abrasive compound for safety anti-skid floors, stair treads, sidewalks, highways and airstrips. Material is said to have excellent affinity to concrete, asphalt, sealed wood, steel and other foot and vehicle traffic surfaces. Carborundum Co., P. O. Box 337, Niagara Falls, N. Y.

perlite concrete 944

The use of expanded perlite insulating concrete in roof decks and floor fills is covered in a bulletin which includes tables showing typical mix designs, physical properties and thermal conductivity, as well as typical load test data for concrete roof decks at various spans. Complete specifications for the insulating concrete are also given. Perlite Dept., Great Lakes Carbon Corp., 612 S. Flower St., Los Angeles, Calif.

waterstop 945

A 4-page brochure provides cross-section drawings, engineering specifications and application details of the complete range of sizes and types of a pvc waterstop which is said to retain flexibility indefinitely and to eliminate leakage due to fatigue, breakage, oxidation, or chemical deterioration. Tri-faced ridge construction allows correct pressure distribution, virtually eliminating hair line fractures. Electrovert, 124 E. 40th St., New York, N. Y.

concrete guns 946

Truck-mounted or trailer-mounted models of concrete gun rigs will shoot concrete at a rate of from 8 to 12 tons per hour employing a 365 CFM compressor. Compact, continuous feed operation allows a minimum crew to shoot as little as a one-sack batch for a quick repair job or ton after ton of concrete on a construction job. On construction work, the same rigs are capable of shooting up to 18 tons per hour when supplied with 600 cubic feet per minute of air and ready mixed concrete. Ridley & Co., 2217 Pontius Ave., Los Angeles, Calif.

POWER TROWELS 6 models: 2 Hydra-Trowels, 4 manually-adjusted . . . for velvet smooth floor finishes.

COMPACTOR FLOATS 3 Compaction Control models . . . improve wear resistance and reduce installation costs of floors.

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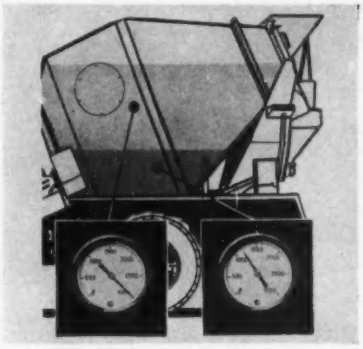

measures concrete **947**

The Con-O-Mizer eliminates guesswork in charging partly-filled drums and enables placement of two or more small jobs from a single batch, accurately measuring out one, two or three cubic yards. If a load of concrete is not completely used, the Con-O-Mizer indicates how much to add to the next batch. The device is available for installation on any mixer. Concrete Transport Mixer Co., 4985 Fyler Ave. St. Louis, Mo.

expansion joint **948**

Cork expansion joint will compress to ½ its thickness under a load of 50 pounds per square inch. With release of pressure, it is said to return to within 95 percent of its original size. The cork is asphalt impregnated and encased in felt. It is reported to weather well and to have good handling qualities. National Expansion Joint Co., 1601 Embarcadero Rd., Oakland, Calif.

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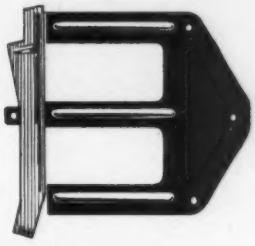

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The MODERN method of supporting walers on wood forms designed and engineered to give maximum performance and safety.

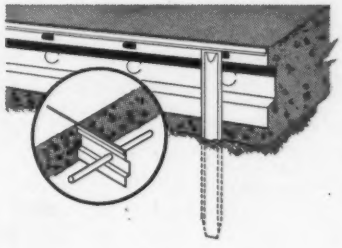
Vines Waler Brackets successfully support, space and retain walers independently of wall ties or clamps without toe nailing to studs and meet the requirements of the contractors and the safety engineer.

BURKE HANDY REEL

- Solid continuous aluminum frame.
- Self locking pin.
- Reversible belt loop for right or left hand workers.

Finger tight screw means:

No wrenches to use . . . no parts to lose . . . no threads to strip. Easy to rewind.



KEYED KOLD JOINT FORMS

A new concrete construction product that serves as form, screed, and true cold joint, left permanently in the concrete floor slab. The use of Keyed Kold Joint eliminates spalled joints . . . produces a cold joint structurally sound and architecturally beautiful. Keyed Kold Joint also eliminates costly make-up and stripping of split forms for checkerboarding. Saves up to 35% in cold joint form costs . . . results in neater, uniform joints.

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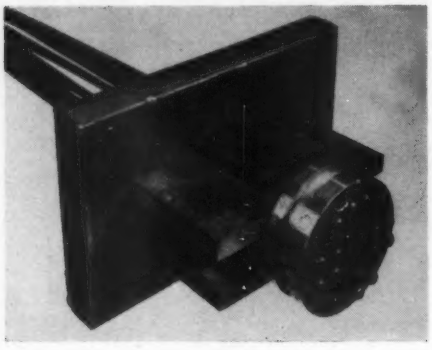
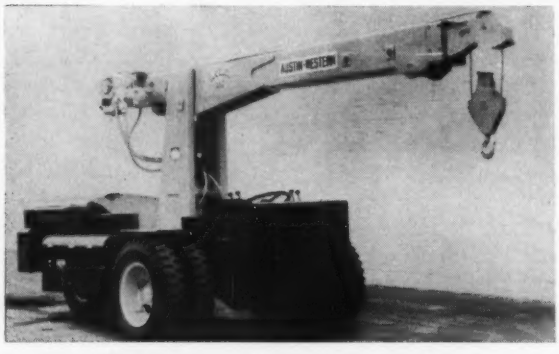


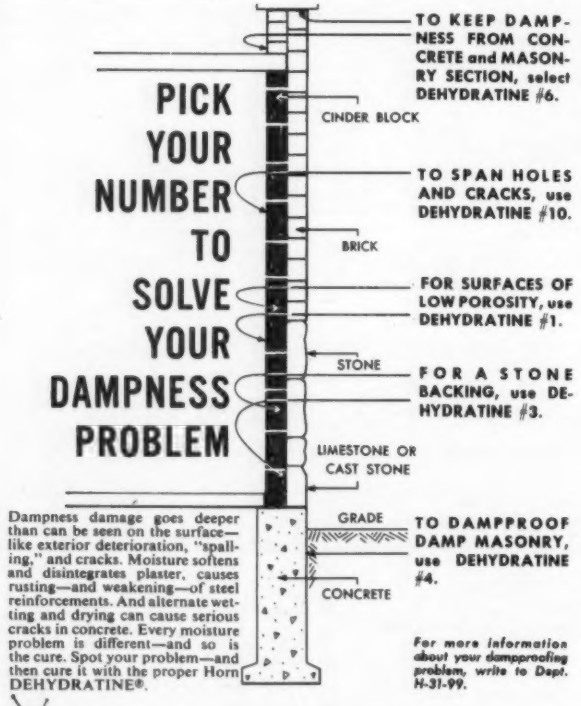
stressing washer 949

Newly designed stressing washer used in the Prescon system of post-tensioning pre-stressed concrete has one groove which means faster and easier attachment of the collar and pull rod of the hydraulic jack, according to the manufacturer. Elimination of threads on the washer reduces the possibility of damage by rough handling and simplifies collar attachment, even when dirty. The Prescon Corporation, P. O. Box 4186, Corpus Christi, Texas.

hydraulic crane 950

Tri-cycle chassis on this hydraulic crane provides high maneuverability in close quarters and permits use of a wide range of optional booms for all types of materials handling work in the up-to-three-ton range, according to the manufacturer. Road speed, depending on type of surface and whether or not a load is suspended from the hook, varies from 2 to 15 miles per hour. Austin-Western Works, Baldwin-Lima-Hamilton Corp., Aurora, Ill.

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CINDER BLOCK
TO SPAN HOLES AND CRACKS, use DEHYDRATINE #10.
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products

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expansion joint 951

Weather resistant expansion joints, composed of synthetic rubber and zinc, are designed to expand or contract with temperature changes, thus eliminating cracking and crumbling at the seams of terrazzo tile and concrete flooring. The joint is half submerged into the concrete as it is being placed. The terrazzo mixture or tile is laid on top of the concrete to the height of the expansion joint. The manufacturer recommends the product for terraces, shopping center plazas and industrial storage areas. Firestone Rubber & Latex Products Co., 1200 Firestone Parkway, Akron, Ohio.

floor catalogue 952

Terrazzo and concrete floor aggregates, non-slip abrasive and stair and floor tile used to provide safe and wear-resistant walking surfaces, wet or dry, are described in a catalogue. Recommended uses, specifications and application methods are included. Norton Co., Worcester, Mass.

testing equipment 953

Bulletin No. 26 describes a line of concrete testing equipment which includes cylinder molds, slump cone and puddling rod, concrete tester, ball penetration apparatus, cylinder capper, concrete thermometers, and several other items of interest to anyone engaged in concrete construction. Humboldt Manufacturing Co., 4466 N. Harlem Ave., Chicago, Ill.

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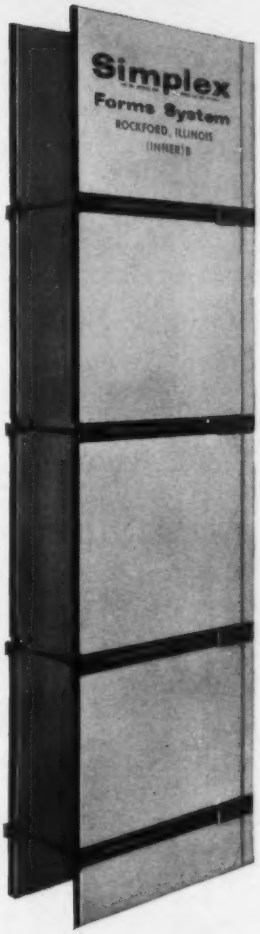

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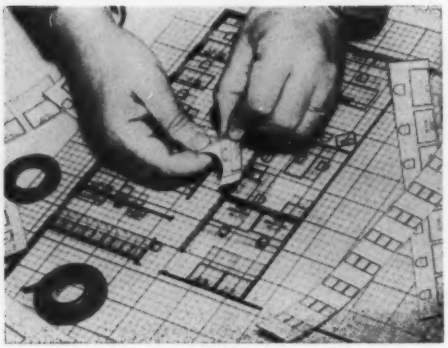

pressure-sensitive drafting materials 954

Clearly printed on shrink-resistant durable transparent materials, a line of tapes, templets, grid sheets, die cut symbols and numbers and letters save time and produce professional looking work for artists, draftsmen, designers and architects. Over 2,000 items are available, including machine tool templets, industrial grid sheets, solid rules of many widths, and architectural symbols. Allied Graphics Corp., Glenwood Landing, Long Island, N. Y.

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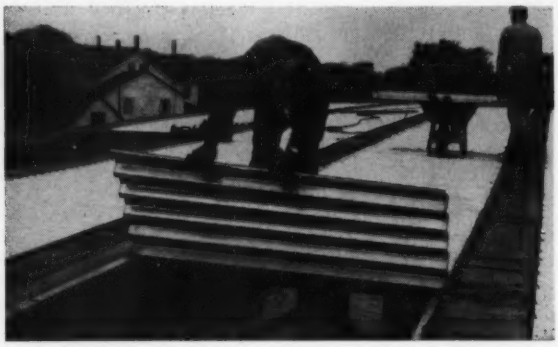
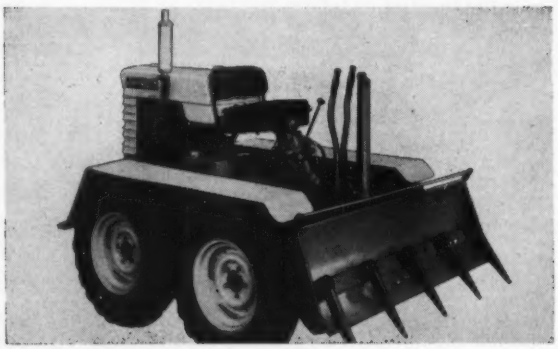


bridge floor forms 955

Permanent galvanized steel forms for concrete bridge floors, available in 20-, 18-, and 16-gage thicknesses, eliminate the need for erecting and removing wood forms. As soon as each form unit is set in place between stringers, it provides a solid working platform, ready for reinforcing steel and concrete. The pitch between corrugation ribs fits the spacing of the reinforcing steel that is designed for a particular bridge deck. Thus, the concrete that goes into the ribs also serves as cover for reinforcing bars. Granco Steel Products Co., 6506 N. Broadway, St. Louis, Mo.



four-wheel drive tractor 956

Four-wheel drive tractor especially designed for light construction work is available in 4 different, hydraulically operated and ready equipped 2,000-pound models: bulldozer, grader clam, roll bucket and loader. Controlled differential steering gives a turning radius of 12 inches in a 6-foot curb to curb circle. Four-wheel drive system gives high flotation and extra traction. The operator is seated forward for good visibility in the working area plus better operating balance, according to the manufacturer. Detroit Tractor, Ltd., Muskegon, Mich.

products

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construction products 957

Catalog 100 covers a varied line of products for use in the construction of highways, bridges, airports and concrete construction of all types. It includes expansion joints, joint sealing compounds, control joints, sewer joint compounds, waterstops, curing compounds and other products in the Sealtight line. W. R. Meadows, Inc., 26 Kimball St., Elgin, Ill.

corner guard 958

Metal corner guards will extend the life of Gates plywood form panels by reinforcing the area of the panels most subject to deterioration. Rivets are furnished with the guards for attaching, and epoxy cement can be used with the rivets to hold corners even more rigidly. A folder illustrates step-by-step installation of this accessory. Gates & Sons, 80 S. Galapago St., Denver, Colo.

admixture 959

Concrete in water and sewage works is exposed to the most severe conditions: weathering, freezing and thawing, saturation with water and chemical corrosion. Owners' reports and studies of 35 installations in which Pozzolith concrete was used are presented in bulletin MBR-P5. Discussion includes factors to be considered for proportioning of concrete for severe exposure conditions to produce low permeability and high durability. The Master Builders Co., Cleveland 3. Ohio.

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products

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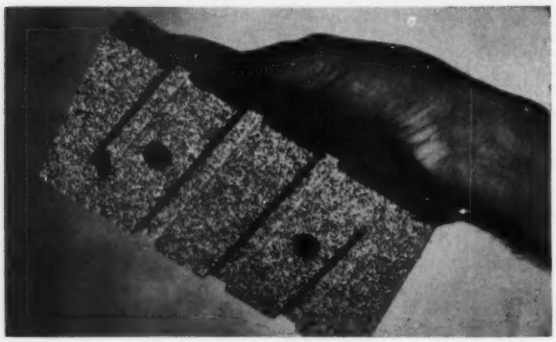
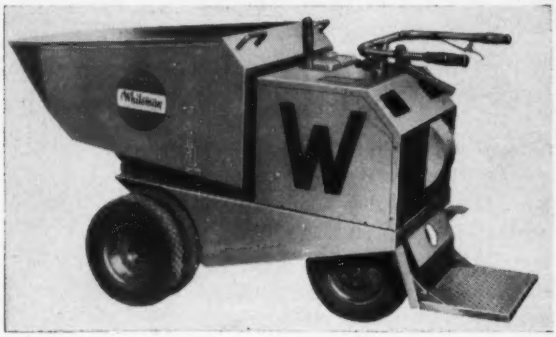


power buggy 961

Automatic speed changer on this 11-cubic foot buggy varies drive ratio automatically to give greater pulling power or greater speed, as needed. Unit is compact and lightweight, designed for use on narrow runways, elevators and through doorways. Riding step and positive control dumping mechanism are standard equipment. Whiteman Manufacturing Co., 13020 Pierce St., Pacoima, Calif.

rubbing brick 960

A 26-ounce fluted rubbing brick for smoothing masonry surfaces is made of a silicon carbide abrasive grain and is fitted with a comfortably shaped wooden handle. Brick measures 6 by 3 by 1 inches and has diagonal flutings ¼ inch deep to speed cutting action. The manufacturer recommends it for overhead work or when finishing high walls where its lightness will lessen fatigue. Behr-Manning Co., Div. of Norton Co., Troy, N. Y.



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